## Acute Toxicity to Aquatic Plants

| | |
|---|---|
| **Category Chemical** : | 8002-05-9 Crude oil |
| **Test Substance** : | 8002-05-9 Crude oil |
| **Test Substance Purity/Composition and Other Test Substance Comments** : | Three crude oils taken from the North West shelf of Western Australia were tested. A heavy crude oil (21 °API), medium crude oil (34 °API), and a light crude oil (48 °API) were tested. |
| **Category Chemical Result Type** : | Measured |
| **Test Substance Result Type**: | Measured |

### Method

| | |
|---|---|
| **Year Study Performed** : | 2002 |
| **Method/Guideline Followed**: | ASTM E1218-90 |
| **Deviations from Method/Guideline** : | Natural seawater was used, rather than a standard growth medium. |
| **Species**: | Isochrysis sp. (axemic strain CS-177; Tahiti isolate) |
| **GLP**: | No |
| **Analytical Monitoring** : | Yes |
| **Test Type**: | 96-h static exposure |
| **Test Vessel**: | 100 mL Erlenmeyer flasks, holding 50 mL test solution |
| **Water Media Type**: | Natural seawater |
| **Test Concentrations**: | Dilutions of a water soluble fraction (WSF) prepared from a 9:1 (v/v) seawater/oil mixture. |
| **Nominal and Measured Concentrations**: | Nominal concentrations were not provided, but the report indicated dilutions of the WSF were made and used in testing. Report details were insufficient to associate any of the reported measurement data with a corresponding WSF. |
| **Total Exposure Period**: | |

| | |
|---|---|
| **Vehicle Used**: | none |
| **Vehicle Name**: | |
| **Vehicle Amount and Units**: | |
| **Alkalinity**: | |
| **Dissolved Oxygen**: | |

| | |
|---|---|
| **pH Value**: | Value or<br>Lower Range : Upper Range : |
| **Test Temperature and Units**: | Value or<br>Lower Range : 26.5°<br>Upper Range : 27.5° |
| **Photo (Light/Dark)**: | 12h/12h |
| **Salinity**: | 35‰ |
| **TOC**: | |
| **Water Hardness**: | Value or<br>Lower Range:<br>Upper Range: |

| | |
|---|---|
| **Method/Guideline Test Conditions Remarks**: | Tests were initiated by inoculating flasks with 4 mL of algalstock culture with a cell density of $2.5x10^6$ cells/mL to give an initial cell density approximately $2.0x10^5$ cells/mL in the test medium. Test vessels were 100-mL Erlenmeyer flasks holding 50 mL of test solution. Flasks were covered with loose glass caps. Three replicate flasks were used for each treatment level. Flasks were randomly positioned in a constant temperature water bath at 27±0.5°C. Lighting was maintained on a 12:12 light/dark cycle using cool daylight fluorescent tubes which provided a mean light intensity of 5000 lux (CV = 15%). Flasks were hand shaken twice daily and reposition once daily. At the beginning of the test and every 24 h, the cell density in each flask was estimated by turbidity measurement using a spectrophotometer at 750 nm.<br><br>Total petroleum hydrocarbons in water soluble fractions were quantified by using purge and trap GC/MS for the carbon range of C6-C9 and solvent extraction with GC/FID for the carbon range of C10-C36. |
| **Limit Test**: | No |

## Test Results

**NOEC/LOEC/NOELR/LOELR**

| | Exposure Duration: | Exposure Units: | Value Description: | Value or Lower Range: | Upper Range: | Units: | Basis for Concentration: |
|---|---|---|---|---|---|---|---|
| **NOEC**: | | | | | | | |
| **LOEC**: | | | | | | | |
| **NOELR**: | | | | | | | |
| **LOELR**: | | | | | | | |

**LC/EC/IC/EL/LL Mean Value**

| Exposure Duration: | Exposure Units: | Type | %: | Value Description: | Mean Value or Lower Mean Value: | Upper Mean Value: | Units: | Basis for Effect: | Basis for Concentration: |
|---|---|---|---|---|---|---|---|---|---|
| 96 | hours | EC | 50 | = | 0.94 | | mg/L | biomass | measured dissolved TPH |
| | | | | = | 6.16 | | | growth rate | measured dissolved TPH |
| 96 | hours | EC | 50 | = | 5.51 | | mg/L | biomass | measured dissolved TPH |
| | | | | = | 8.38 | | | growth rate | measured dissolved TPH |
| 96 | hours | EC | 50 | = | 3.60 | | mg/L | biomass | measured dissolved TPH |
| | | | | = | 7.38 | | | growth rate | measured dissolved TPH |

| | |
|---|---|
| **Results Remarks**: | Three crude oils taken from the North West shelf of Western Australia were tested. For the EC50 values reported above, these correspond respectively to a heavy crude oil (21 °API), medium crude oil (34 °API), and a light crude oil (48 °API). |
| **Reliability/Data Quality** | |
| **Reliability**: | 2 |
| **Reliability Remarks**: | Reliable with restrictions. There was sufficient documentation in the report to judge the value of the data. |
| **Key Study Sponsor Indicator**: | |
| **Reference** | |
| **Reference**: | Tsvetnenko, Y. and L. Evans. 2002. Improved approaches to ecotoxicity testing of petroleum products. Mar. Poll. Bull. 45:148-156. |